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MENTAL HYGIENE IN INDUSTRY

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Dr. G. E. Maddison, 260 Germain Street, Saint John, N.B.

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Canadian Journal of **PUBLIC HEALTH**

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NUMBER 12

Mental Hygiene in Industry

W. H. CRUICKSHANK, M.D., D.Psych., D.P.H.

Medical Director

The Bell Telephone Company of Canada

Montreal, Quebec

WITH each advancing year it is realized that more and more symptom complexes formerly considered to be organic in nature, are explainable on the basis of re-action to emotional tension, fear, frustration and insecurity. These fears and frustrations, in some instances, lead to actual breakdown but much more commonly result in translation to physical symptoms which may be referable to almost any of the body systems and give rise to headaches, dizziness, stomach trouble, rapid heart and increased blood pressure, to extreme fatigue or even paralysis.

Emotional responses within the body were designed originally to prepare the body for fight or flight in the face of danger. In a complicated society such as we now have where one can no longer respond to emotion by physical fight or flight, these responses are expressed in different ways and can be very disturbing and the basis of a great deal of ill-health. Thus the observation that emotional ills appear to be disorders of increasing civilization.

The problem of emotional or mental ill-health within the industrial population is no small one. The actual incidence of disorders of emotion and morale in Canadian industry is not accurately known. It has been estimated, however, that such disorders account for as much as one third of the total employee disability rate. It is known that about one half of the workers who visit industrial dispensaries to seek advice about health problems have no demonstrable organic basis for their complaints. Of course it is also true that about 60% of the patients who attend out-patient departments of general hospitals do not suffer from organic disease.

Presented at the forty-third annual meeting of the Canadian Public Health Association, held in the Macdonald Hotel, Edmonton, September 6-8, 1955.

In addition to its importance as a primary cause of lost time the effect of emotion and attitude on duration of organic illness and on rehabilitation is not inconsiderable. If one adds to this the effect of non-disabling unhealthy emotional re-actions on efficiency, morale and co-operation on the job the importance of the subject in relation to overall industrial efficiency is almost overwhelming.

What is our definition of mental health? Mental health implies an ability to live in harmony with one's environment. It implies the ability to survive, to compete and to discharge one's responsibility in relation to personal capacities, to get along with people, to acquire skills which are consistent with ability, to obtain satisfactions, to accept and to live with or overcome personal limitations and to accept the consequences of one's behaviour. It may be important to point out that environment must be included in any definition of mental health. There are always the two variables, the individual and the environment. It may be important to point out that regardless of the qualities of the individual there are some environments in which a high level of mental health cannot be achieved.

One of my teachers would greatly simplify the definition of mental health by equating it to happiness and in turn to security. He would define mental ill-health as unhappiness and a feeling of insecurity. Under such a definition it can be readily seen that mental health is a relative state since no human is completely happy or completely secure or completely self-sufficient. This is not to be interpreted that few are mentally healthy. Some insecurity, and some unhappiness must be regarded as a normal rather than an abnormal state.

What are the causes of mental or emotional ill-health? Those interested in the subject quickly come to realize that there is never in a given case one single causative factor, as was once thought. The cause never appears as a bolt from the blue, nor as a mysterious entity destined to implant itself at a particular period on unprepared soil; the cause is a process—something that moves and shapes itself in the passage of time. It doesn't just happen. The effects of heredity, child guidance and habit training, all the environmental influences and experiences in childhood and youth, of physical health, culture, etc., all have a bearing on ultimate emotional stability. Surely this concept of etiology provides increasing incentive in our urgent desire to promote mental health and to prevent mental ill-health. That we have a long way to go in mental hygiene is suggested by the large number of our people who achieve chronological maturity while still retaining emotional immaturity to a degree which interferes with their ability to live in harmony in the situation in which they find themselves.

On the bright side, however, we have accumulating evidence to suggest that *behaviour can be predicted and that the process of personality maturation can be influenced*. There is now good reason to believe that a child who is loved will almost invariably be capable of loving others. There is now ample evidence to show that a child who has not had love will be hostile and will lack trust in people. There is now good reason to believe that a child who has been over-protected, never allowed the opportunity to develop independence appropriate

to his age, will be neurotic and dependent. There is good reason to believe that a child who grows up in association with people who have respect for the rights of others and the laws of society, will also have respect and consideration for the rights of his fellow-men. There is good reason to believe that a child who has been rejected will usually be resentful, often delinquent and always insecure. Much progress has been made in the area of child guidance. Our mental hygiene activities must not stop with parent education and teacher training but must be extended throughout adult life. The maturation of personality does not stop with the cessation of physical growth. Under favourable conditions it may extend throughout the major period of adult life.

Do these fundamental mental health observations just mentioned have any bearing on the mental health of industrial workers? Are industrial workers susceptible to the effects of love, recognition, rejection, over and under protection, satisfaction, rewards and discipline? We know that adults on the surface are more sophisticated. We know that they have been conditioned by all previous life experience. In spite of this, my observations would lead me to believe that the fundamental responses to love, protection, rejection, recognition and other forms of stimuli remain relatively unchanged in the industrial population. That workers individually and collectively like to be recognized, like to have at least a measure of control over their own affairs, like to have the opportunity to develop skills appropriate to their individual capacity and through the acquisition of skills to enjoy a measure of independent security, unfortunately is a relatively recent discovery in industrial society.

Observation would tend to suggest that the mental health needs of people in industry are not fundamentally different than they are in the home. Just as parents are now recognizing the importance of participation, responsibility, example and discipline in child development, so industry is now beginning to look at the advantages of providing those conditions of work which foster the development of employees who are mature, and who are capable of independent thought and action. This is, of course, quite foreign to the master-servant era now disappearing from industry.

That we have not progressed too far along this road as yet is emphasized by the fact that a great industry in the great country to our south recently announced that employers could and probably should bargain with labour unions in good faith. That this should be considered a new concept of bargaining in some industries suggests we have a long way to go.

Employees like to be recognized. Employees like a democratic opportunity to advance and to acquire independent security consistent with their skills and efforts. That work in industry should be a method rather than just a means of living is a new concept but fundamental to industrial peace and mental health.

The mental health needs of workers are intimately related to the work situation. The acute emotional reaction which gives us windy indigestion, clammy hands, rapid heart and difficult breathing, for example when one has to give a speech, does little or no harm to health. Chronic emotional response to a grievance or to frustration or to continued fear or to lack of job satisfaction,

undermines health, produces inefficiency and brings about a desire for a change in the order of things. Chronic anxiety undermines health. It is true that chronic anxiety related to situations off the job, such as a mother-in-law in the home, an unhappy marital situation, debt or an invalid child, may affect the health and efficiency of the worker. Observation would lead one to believe, however, that one reason they do affect efficiency is because they impair his ability to make an adequate adjustment to his work situation. The importance to the career worker of a satisfactory job situation is such that if he achieves satisfaction in his job his private conflicts become of secondary importance. In talking with many people it is found that problems of living and of mental ill-health tend to fall into one or more of six major areas. These are:— vocation, avocation, social relationships, sexual experiences, philosophy of life and finance. This thesis cannot be proved, few psychological concepts can be proved beyond doubt, but there is a good deal of evidence to suggest that the opportunity to acquire skills through vocation and avocation is probably the most important single factor in mental health in our competitive society. The more skills we have the more independently secure we are. It is more difficult to take away our skills than it is to take away any of our other possessions. Our skills are our greatest source of recognition and our main hope of immortality. People can stand great adversity and still be happy if acquiring skills and progressing toward a goal.

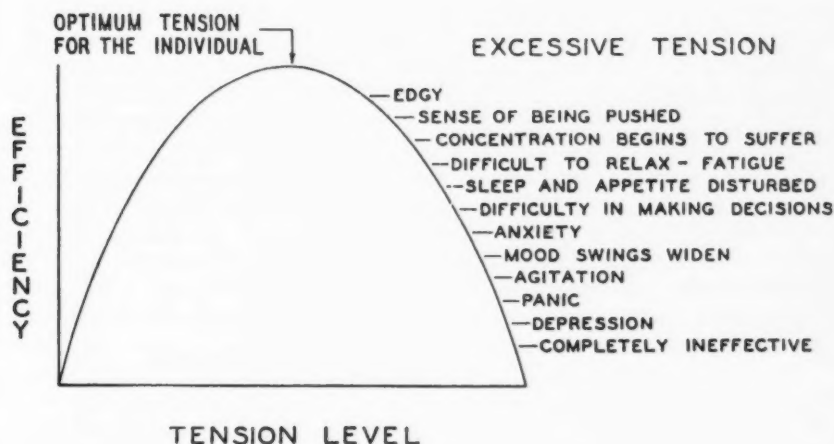
Work and the work situation, therefore, are important to mental health. As would be expected, they are also important as causes of mental ill-health. Of all the mental health problems seen in industry it is probably true that tensional states are by far the most common. Many tensional states are caused by work and the work situation. I thought we might discuss some of the factors in industry which lead to excessive tension and say a word about prevention.

This part of the paper is based both on personal observation and on a series of discussions on the subject of industrial mental health held recently at McGill under the chairmanship of Dr. D. E. Cameron, Professor of Psychiatry, McGill University.

Tension is spoken of rather glibly and yet it is rather difficult to define. Dr. Cameron defines tension as a state of "preparedness for action". This is a very practical definition. The physiologists have for years used the word "tone" to describe the state of a muscle which enables it to act efficiently and immediately in response to the will. Preparedness for action is a desirable state and, as would be expected, is related to efficiency. A muscle which is without tone is clumsy and ineffective when called upon to undertake precise movement. Likewise the person who is not prepared for action is ineffective. We all recognize the fellow who has a healthy level of tension, who is prepared for action. He is referred to as a self-starter. The coach says he is on his toes. The foreman likes to have him in his gang. Some people have a low tension level and require continual prodding. They are usually inefficient.

The following figure shows graphically the relationship between efficiency and tension level. As tension is raised efficiency increases. As tension is increased beyond the optimum, efficiency goes down.

EFFECT OF TENSION ON EMPLOYEE EFFICIENCY



The responsibility of industrial management is to maintain the tension of employees at an efficient level. As Canadians we try, through private enterprise, to keep the tension level of our population at a level which enables us to compete successfully in world affairs. Sometimes we fail to realize that when the tension level is raised too high efficiency goes down. Excessive tension, when prolonged, not only reduces efficiency but undermines health.

The effective person is the person who can maintain his tension level at or near peak efficiency. He will occasionally get the wheels going too fast and then cut back a bit as he notices that he becomes edgy or irritable and not quite so effective. To some, such symptoms are merely a signal calling for greater effort or increased activity. When this occurs a vicious circle is established with productivity going down and tension going up. Under these conditions typical symptoms develop. Concentration begins to suffer. Relaxation is impossible. Fatigue develops. Adrenalin is pumped into the blood stream too fast. This is the fear reaction. Sleep and appetite are disturbed. The heart may start to pound. Decisions become increasingly difficult. With indecisiveness comes real anxiety followed by depression, a feeling of hopelessness. Agitation usually precedes panic. At this stage hospitalization is usually indicated.

Now relatively few people go through the entire cycle, but, a great many industrial workers do get over into dangerous tension levels with adverse effects both on productivity and health. Because they cannot get through their work during the day they still take the brief-case home at night.

The ability to withstand tension varies markedly from person to person. It is

important to realize that everyone is susceptible to unhealthy tension levels under certain conditions. Everyone has a breaking point. In some, the tension tolerance, for one reason or another, is very low. The mere effort of living, even in a protected environment, may produce disabling tension levels in some people. Such people usually require the protection of the hospital environment to survive. At the other end of the scale some can apparently withstand almost endless tension producing stimuli with surprisingly little in the way of impairment to efficiency.

What causes the wide variation in the susceptibility of people to tension? There may be hereditary factors. These do not seem to be very important. Most of us would agree that environmental influences are more important in determining our personality development and our ability to withstand tension. We have certainly all noticed the effect of environmental factors such as climate and racial customs on tension level. The ability to withstand tension depends on all of our past experience including our habit training, our opportunities to accept and deal with responsibility, our intellectual capacity, our physical health and undoubtedly on our philosophy of life.

There are certain groups of people who are characteristically more susceptible to tension than others:

1. *The physically handicapped* as a group do not stand tension well. The blind, the deaf, the disabled compete unfavourably both socially and economically and unless they possess unusual personality maturity tend to be tension prone.

2. *Older people tend to be tension prone.* Our society tends to discard age and experience in favour of youth and technological advance. Older people are at a disadvantage and they tend, for this reason, to be tension prone. There are many reasons for this. Often older people in industry have not achieved the goals they have set for themselves. They have become less adaptable. Often they have devoted a major portion of their lives to one business and they may resent new authority. The pre-retirement group are particularly susceptible to tension and require careful and extremely considerate leadership.

3. Those with certain *personality characteristics* are tension prone. Those who lack confidence, those who are hostile and do not trust people, those who find it difficult to work with people, those who are easily frustrated or are highly sensitive and susceptible to guilt are prone to excessive tension.

4. The type of motivation in the individual has a bearing on susceptibility to tension. Those who are over-motivated are impatient and tension prone. Those who are poorly motivated are tension prone if prodded. Those with conflicting motives tend to be tension prone. Those who are over-motivated who also have limited capacity, are particularly susceptible to tension.

So people vary in their ability to withstand tension. The process of living inevitably produces contact with tension producing stimuli. These may be related to problems in the home, in the community or at work. In the industrial situation tension producing stimuli may be found in the job or in the work situation. Some jobs produce more tension than others. Some of the factors in jobs which are tension producing may be listed:

Responsibility Factor: The amount and kind of responsibility has a bearing. Strangely enough jobs with not enough responsibility will produce excessive levels of tension in aggressive people just as readily as jobs with excessive responsibility. In this connection industry has an obligation to keep people busy. Jobs involving responsibility for people tend to have a high tension rating. Thus probably the justification for higher rewards on management jobs. Jobs requiring the co-ordination rather than command of the thoughts and actions of people have the highest tension rating. In regard to responsibility it is important to realize that when it is clearly defined it is much less tension producing than indefinite or ill-defined responsibility. Responsibility accompanied by authority is less tension producing than responsibility which is devoid of authority. These are important considerations in industrial organization and in placement.

Physical Factors: Where the physical demands of the jobs are beyond the physical capacity of the worker tension is prone to develop. This is readily observed in the older or handicapped worker. Job factors such as high noise level, vibration, exposure to heights, proximity to electrical currents or other danger, tend to increase tension levels.

Unpredictable Flow of Work: Surges of responsibility and work load seen both at the executive and the production level affect tension. The adverse effect is exaggerated if the cause of the change of pace is either unknown or thought to be unjustified.

Intellectual Requirement: Jobs requiring either more or less capacity than the individual has tend to produce insecurity or boredom with resultant unhealthy tension levels.

Deadlines: The deadline job is typically tension producing. The incidence of alcoholism in certain occupations noted for their deadlines is sufficient evidence of their tension producing characteristics. Alcohol is the most readily available tension reducing agent in our society.

Creative Jobs: Creative jobs, particularly those in which the individual may not see the results of his efforts in direct relationship to his efforts, are tension producing. The staff type of job has a high tension rating for this reason.

Repetitive Craft Jobs: High speed repetitive jobs usually demand only a limited range of the workers' skills. In addition they may have little meaning to the worker and are tension producing. Fragmentation of work operations leads to less and less opportunity for the development of useful skills. This is a major problem in considering the mental health of our industrial population and it is increasing.

These are some of the factors in jobs which affect the tension level of workers.

The job setting also has a bearing on the tension level of workers and management. Some of the factors in the job setting which are important may be listed: *Supervision:* Management's job is to keep the tension of working people at an efficient level. If it is too low production suffers. If it is too high both production and health suffer. The leadership ability of the supervisor is important in this regard. When employees lack confidence in the boss the tension level of the entire group is affected. If the boss is a poor leader, if he discriminates, if he

fails to recognize good work, the tension level is affected and production goes down. *Good supervision will go a long way toward maintaining healthy levels of tension on any job.*

Rigid job standards tend to raise tension levels. This is particularly so if the need for such rigidity is either not understood or considered necessary by the employee.

Non-Acceptance: In group activities it is essential to be and feel a part of the group. An employee who feels that he is not accepted by the boss or by the group or even by the customer will be inefficient and tension prone. A boss who is not accepted by subordinates will develop unhealthy tension.

We have reviewed at some length factors which influence tension level. We have talked about variations in susceptibility to tension. We have discussed the adverse effect of tension on physical and mental health and on productivity. What can be done about it? How can we develop working conditions which will avoid these undesirable results?

It is important again to state that an optimum level of tension is essential. In fact industrial management has an obligation to keep the tension of industrial people at an effective level. This is not only healthy for the industry but there is some indication that it is also healthy for the people in industry. However, the prevention of unhealthy or inefficient levels of tension is one of the big challenges in our industrial mental hygiene program.

This brings us to a discussion of desirable mental hygiene activities in industry and in industrial communities.

COMPANY POLICY

The mental health program of any company starts with its broad policies of administration. Those policies which enhance the qualities of the individual by contributing to his satisfactions and his recognition, those which encourage his participation and foster his growth and development contribute to his mental health. Those policies which degrade the status of the individual produce anxiety, feelings of tension and insecurity and inevitably result in mental ill-health. Such policies tend to lower morale and produce high absence rates. They promote countervailing group re-actions, such as the labour movement, which are designed to resist the introduction of additional degrading policies and to replace such policies by those which contribute to at least a measure of material security and human dignity.

LEADERSHIP

Just as the major share of responsibility in child guidance has fallen on the shoulders of parents and teachers, so the burden of mental health and morale in industry must fall on the shoulders of management people. They are the leaders of our industrial organizations. All group effort depends on organization which demands leadership. Leadership may be defined as the skill in developing co-operative effort. Good leadership is probably the most important single factor in any industrial mental hygiene program. Good man-management is a skill requiring great ability and wide experience. Leaders are not born.

They acquire their skills by training and doing. The selection and continued training and development of management people is probably the most important challenge confronting Canadian industry today. It is a fact that the crucial inter-personal relationship on the job takes place between the worker and the first level of management. The man and his boss. Unfortunately the first level of management, the foreman, is usually the least experienced. A foreman may or may not have special aptitudes of leadership. He often has not had extensive training and certainly is not likely to have had wide experience in leading people. In this connection it may be significant, although many factors have a bearing on the subject, that peaks of industrial unrest have coincided with periods when large numbers of new management people have been created, e.g., the boom periods.

CONDITIONS OF WORK

Working conditions which provide, among other things, freedom from discrimination, a democratic opportunity to advance, work assignments which are meaningful and lead to the development of useful skills, a healthy degree of security and rewards which are roughly commensurate with effort, are fundamental to morale and to mental health.

PLACEMENT (VOCATIONAL GUIDANCE)

The ability of workers to acquire skills and to produce varies in relation to their capacity, motivation and persistence. Careful placement of employees on jobs which they can do and from which they can gain satisfaction is a vital consideration in mental health. When an employee is placed on a job which is beyond his ability he becomes insecure and unhappy through lack of accomplishment. He cannot acquire the required skills and he is insecure. On the other hand an employee obtains little in the way of lasting satisfaction from acquiring skills which require only a limited portion of his ability. The challenge in placement then is to ascertain the interests, abilities and aptitudes of employees and to place them at jobs to which they are physically and mentally suited.

EMPLOYEE DEVELOPMENT

The challenge in employee development is to discover and to develop to the optimum the potential skills of all members of the work force.

TRAINING

The training of employees, including induction into the business and into new assignments, does a good deal to overcome the insecurity and tension which always results when people find themselves in new situations. Job training is extremely important in facilitating the acquisition of required skills. Management training, including such subjects as human relations, observation and study of human behaviour, conference leadership, communication, interviewing, administration, etc., offers tremendous opportunities for improving the leadership skills of our industrial leaders.

INDUSTRIAL MEDICAL SERVICES

Diagnosis and Placement

The early recognition and suitable placement of the tension prone is important in the maintenance of health and production. Ready access to health counselling services makes possible the early diagnosis of conditions which might lead to disability. The preplacement examination, the periodic examination and the dispensary visit provide important opportunities for preventive work on an individual basis.

Treatment

Prevention and case-finding is the important part of the health job in industry. Continued treatment of disabling mental health problems is the job of the private physician, the consultant, the clinic or the hospital. Emotional first aid measures, however, can often prevent breakdowns requiring prolonged therapy. In the average dispensary industrial physicians and nurses undertake much more counselling in relation to mental health problems than in relation to organic disease. For this reason health workers in industry are relatively ineffective unless they are students of human behaviour.

Education

You cannot teach mental health. Assistance in personality development, through counselling, is constructive. Those who like people can readily become students of human behaviour and with sufficient experience can learn to interpret in a non-technical way the significance of behaviour patterns. The training of line management, personnel and health staff in this field is particularly valuable in the mental hygiene program within industry.

Rehabilitation

The early and safe return to work following illness, organic or otherwise, is an important consideration in the maintenance of industrial health. Disabling injury or disease always produces insecurity. The mental health factors are usually the major consideration in industrial rehabilitation programs. They are much more difficult to deal with than organic factors. Rehabilitation following major mental illness is a problem requiring a highly co-ordinated effort.

COMMUNITY RESOURCES

All mental hygiene activities in the industrial community contribute either directly or indirectly to the mental health of the industrial population. The child guidance clinic has as its objective assisting in the development of mature adults who will ultimately take their place of responsibility in industry. The general practitioner is concerned with the physical, mental and social well-being of his patient. The psychiatric clinic is prepared to assist in the diagnosis, treatment and follow-up of those who develop mental health problems. The trained social worker, the public health nurse, the psychiatrist and all professional groups who are interested in the problems of living contribute to the

over-all mental health of the industrial worker, who now represents almost one out of every three persons in our Canadian population.

That health, morale and industrial efficiency are inseparable is a well-established fact. That the maintenance of emotional health offers the greatest challenge to industry, to industrial medicine and psychiatry and to public health, unfortunately has been recognized only within recent times. That a man's job and his relationships to his confreres and to his leaders within industry are crucial factors in determining his mental health and morale requires much more attention. That industrial medicine, psychiatry and public health workers might devote a larger proportion of their efforts to this phase of health conservation is presented for your consideration.

THE CANADIAN PUBLIC HEALTH ASSOCIATION

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in the

**ADMIRAL BEATTY HOTEL, SAINT JOHN,
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by February 1st, 1956.**

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The Prevention of Rheumatic Fever in a Saskatchewan Health Region

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Moose Jaw Health Region No. 6

Moose Jaw, Saskatchewan

RHEUMATIC fever is the most important cause of heart disease developing in school children and young adults. In Saskatchewan, where it causes rather more than 50% of all deaths from heart disease between the ages of 5 and 35 (1), there are probably about 300 definite new cases each year (although there are three times as many hospital admissions and clinical diagnoses as this) and at any one time the number of persons with the disease still in an active or near active state number some 1 per 1,000 of the population or approximately 850 persons for the province.

It seems fairly well proven that rheumatic fever is a sequel to an infection with a variety of types of Group A beta-haemolytic streptococci. In several series of cases evidences of rheumatic fever has appeared in some 3% of patients over the age of 4 with acute respiratory disease caused by these organisms, and in another 3% minor manifestations suggestive of the disease have been found (2). Rheumatic fever is not thought to result directly from damage caused by these organisms or their toxins, but is considered to be a delayed sensitivity reaction occurring in persons who have been previously sensitized by substances arising from an interaction between streptococci and the human tissues (3).

The disease runs a variable course with a definite propensity for recurrences and downhill progression. Obvious rheumatic activity may persist for weeks or years with most patients running a polycyclic course which not infrequently extends into late adult life.

The prevention of rheumatic fever can be considered as relating to the prevention of streptococcal infections, their rapid and efficient treatment should they occur, and the prevention of recurrences of the disease.

PREVENTION OF STREPTOCOCCAL INFECTIONS

It has been estimated in the United States that the number of streptococcal infections per year approximates to 4% of the population (4). Over 90% of clinical streptococcal infections in man are caused by organisms from Group A (5), and in any given community these normally follow a fairly regular epidemic pattern associated with a temporary predominance of one or more immunologically specific types which wax and wane to meet the altering communal pattern of resistance. Host factors may account for atypical clinical

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illnesses as well as subclinical infections as the streptococcal strains derived from these types of infection do not appear to differ from those obtained from more typical illnesses.

Persons with clinically evident streptococcal infections (especially streptococcal pharyngitis and tonsillitis), persons with subclinical or symptomless streptococcal infections, and persons who have clinically recovered from the disease but who still carry the organisms in their nasopharynx (especially recent nasal carriers) (6), constitute the primary reservoir of infection. While milk and water-borne infections do occur, most infections follow direct contact and the likelihood of infection decreases as the distance from the source of infection is increased. Children apparently spread infection easier than do adults (7). Secondary reservoirs of infection, such as dust and blankets, are of lesser importance (8). Whether a given person develops a streptococcal infection after exposure is affected by the existence or otherwise of a type-specific immunity, possibly a familial pattern of resistance, the presence of pre-existing disease (more frequent after influenza, measles and diphtheria), and the hormonal-stress pattern (activity of the gluco corticoids appears to increase the likelihood of infection) present at the time of exposure. Tonsillectomy does not seem to alter the overall picture (9).

Sulphadiazine (10) oral penicillin (11) and intramuscular penicillin (12) have all been given successfully to large groups to reduce the human reservoir of infection, but in civilian practice this type of control program appears largely impracticable except amongst partly closed populations.

The treatment and quarantine of streptococcal infections could reduce transmission but will not stop it because of the numbers involved and because of late or missed diagnoses. In the Moose Jaw Health Region these measures have been used to some extent. The avoidance of overcrowding also reduces the possibility of transmission. As the secondary reservoir (dust, droplet nuclei, toys, etc.) are usually unimportant sources of infection, the use of aerosols, ultraviolet light and dust settling compounds is of little value.

Vaccines have been tried in an attempt to increase individual immunity but the results have been disappointing possibly due to the number of streptococcal types involved. Better results and fewer reactions may follow the use of purer type specific M-proteins for producing immunity but this remains unproven (11). General resistance may be improved by an adequate diet, the avoidance of fatigue and the careful handling of other illnesses (e.g. influenza) which might predispose to streptococcal infections.

CARE OF STREPTOCOCCAL INFECTIONS

Streptococcal pharyngitis and tonsillitis are the commonest manifestations of streptococcal infection and typically show a painfully severe exudative sore throat with pyrexia, chills, anorexia or abdominal pains, and a headache, while nausea and vomiting is frequent in children. In children under 2-3 years of age, infections are usually prolonged with suppurative complications and rheumatic fever and nephritis as rare sequelae, while tonsillitis and pharyngitis occur in older children and adults as an acute disease followed not infrequently by the nonsuppurative complications.

The rapid and efficient care of streptococcal infections demands early diagnosis and effective treatment. Early diagnosis demands firstly the education of the public as to the importance of letting a doctor see all cases of sore throat together with some arrangement whereby financial difficulties or difficulties in obtaining an appointment will not prevent this being done.

In the Moose Jaw Health Region this latter has been partly achieved by the provision of a free screening service at the Health Centre available to all preschoolers and school-age children. In addition, we insist on a medical certificate from all school children who are absent for more than three days—where these certificates are obtained from the Health Centre a general examination including a throat examination, is done as a routine and this practice is followed by most of the private practitioners as well. This is particularly valuable in view of the report by Rammelkamp (2) that as rheumatic fever apparently does not occur unless streptococci continue to reside in the oropharynx, the elimination of streptococci after the patient has recovered from an acute attack of pharyngitis will still prevent rheumatic fever.

Early diagnosis also demands the recognition by the practising physician of the signs and symptoms of streptococcal infection together with a clear realization of the expected changes in the clinical picture with age, and the possibility of symptomless infections. Breese and Disney (13) have demonstrated that even in the best hands a diagnosis based on clinical grounds only is 75% correct and emphasize the importance of throat cultures. A series of our own done in June and July 1955 showed an accuracy of only 60% (21 positive swabs from 35 clinically diagnosed cases). Laboratory services are available in the Moose Jaw Health Region but all the practitioners do not yet make full use of it. Public health workers at the Health Centre, therefore, make a routine of throat swabbing every patient notified or sent in as a clinical case of strep sore throat. Since penicillin is made available to proven cases of streptococcal infection free of charge we can verify the majority of these diagnoses but are unable to say how many patients who were not clinically obvious have been missed. The treatment regimen usually consists of one intramuscular injection of 300,000 to 600,000 units of procaine penicillin given by the private doctor, followed by 6 million units of oral penicillin from the Health Centre (once the diagnosis is confirmed) given in divided doses (avoiding mealtimes) over the succeeding 10 days. Occasionally only oral penicillin is used (2 million units is given initially and is made up to 6 million units if the throat swab is positive for haemolytic streptococci), and since July 1955 we have made benzathine penicillin (one injection of 600,000 units) available for treatment to certain physicians who can show positive throat swabs from suspected cases. Follow up throat swabs after two and four weeks respectively have been taken since June 1955 on all patients who showed haemolytic streptococci on their first swab and who have received treatment. The numbers are still much too small to express an opinion, but we have noted more positive swabs (all "scanty") at the 2nd and 4th week from those receiving oral penicillin (5 out of 30) compared with those receiving benzathine penicillin by injection (nil out of 12). Patients are advised to return to their private doctors for a final check up, and those of school age have in addition to obtain a clearance

certificate (which entails a medical examination) from the Health Centre. This check together with a simple explanatory pamphlet given to the patient are additional safeguards to ensure that the patient has taken the oral penicillin faithfully.

The results of this program have been excellent and since January 1953 there was recorded only one person out of 844 with clinical streptococcal infections treated on referral from their private physicians who developed rheumatic fever following a course of treatment as described above. In view of the period involved (nearly three years for the earlier patients) and the detailed rheumatic fever case-finding done by our committee (q.v.) it appears unlikely that we would have been misled by a possible early absence (14) of the generally accepted criteria for the diagnosis of rheumatic fever.

PREVENTION OF RECURRENCES OF RHEUMATIC FEVER

It is stated that amongst children the overall recurrence rate in the year following an attack of rheumatic fever was 20% up till 1939 (15). In that year the first reports were published concerning the use of small daily doses of sulphanilamide as a prophylactic measure and Denny (combining these and later reports) has noted that the recurrence rate was reduced by 85% (2% per annum as compared with 13% in the control group) (11). Penicillin has been used for the same purpose since 1947 and many successful results have been reported following the routine use of various oral preparations (including benzathine penicillin) in amounts varying from 100,000 (16) to 600,000 (17) units daily in single or divided doses. A dosage schedule of 600,000 to 1,200,000 (18) units of benzathine penicillin every four weeks by intramuscular injection has also been used with apparent success, though a fair number of reactions have occurred especially with the larger dose and the not infrequently painful nature of the injection is a disadvantage when used over a prolonged period. Terramycin has also been successfully used as a prophylactic. The antibiotics have given fewer side reactions than have the sulphas.

In January, 1954, it was decided to initiate a prophylactic program in the semi-urban, semi-rural Moose Jaw Health Region (population approximately 50,000), Saskatchewan. The program was started by and is under the control of a committee of the local medical association. This committee consists of an internist, a paediatrician, a pathologist, a public health officer and two general practitioners, and reports back to the association as required. The service covers all persons normally resident in the Health Region or who have been hospitalized in the Health Region, and is provided free of charge.

The initial problem was the finding of the patients. As a first step all hospital records (dating back to 1950) where rheumatic fever had been mentioned as an admission, final, or alternate diagnosis were examined. A standard check list on which was noted the presence or absence of the typical features of rheumatic fever as given by Duckett Jones (19) was completed for each patient and absent information (where available) filled in by reference to the attending physician. Each case was next discussed individually and if there was reasonably conclusive evidence (one or more of the major manifestations) that there had been a clinical attack of rheumatic fever in the previous three years or

that the patient had chronic rheumatic disease and was under the age of eighteen, a recommendation was made that this patient be placed on prophylactic penicillin. If the bulk of the evidence was against a diagnosis of rheumatic fever or rendered the diagnosis indefinite, or if there had been a long interval (in older patients) since the last clinical episode, prophylactic penicillin was not advised and the attending physician was asked to keep a watch on his patient and to report any changes which might cause the committee to change its mind. A few patients, including those who had left the province and those who were definitely not rheumatic fever were listed for record purposes but excluded from further consideration. Yet others were held over and the attending physician requested to make further confirmatory investigations and report back to the committee. In every case the attending physician was kept informed and his opinion sought.

Provision was made for an outside specialist consultation where any difference of opinion existed but the degree of co-operation obtained has been so good that this has never proved necessary. Later patients have been culled from more recent hospital admissions, from patients seen out of hospital by physicians, and by children referred by the school medical services where medical examinations are being done as a routine on all school children. In these cases the procedure has been similar save that the attending physician completes the check list (the hospital record rooms are responsible for seeing that a copy is placed on the bed record for completion as soon as a diagnosis is made) and prophylactic penicillin can be started on the recommendation of any one member of the committee subject to subsequent confirmation by the committee as a whole. Cases are selected purely on clinical grounds and are not limited by any socio-economic factors. We feel that very few potentially suitable cases have been missed.

The selected cases are seen by their attending physician and told by him that they will be receiving prophylactic penicillin and why. To prevent a possible cardiac neurosis great care is taken to emphasize that this is purely a precautionary measure to enable the patient to live a freer life. This interview is followed by a home visit from the public health nurse who evaluates the home, travelling and working conditions of the patient and supplies the penicillin with advice on how to use it in the recommended dosage. At this and subsequent visits (initially monthly—later quarterly) the nurse wins the confidence of the family and the patient, advises on living conditions, checks that the penicillin is being taken, ensures that the patient reports regularly and whenever any inter-current infection appears to the family doctor, arranges for the notification of any respiratory disease in the members of the family, and takes any special measures (throat swabs, etc.) which may appear advisable or may be recommended. Regular reports are submitted to the Health Centre (which acts as the general filing centre for all records) and these are correlated and forwarded to the attending physician for his information.

The patients are regularly seen by their family physician at from 2-4 weekly intervals when on restricted activity, and at 2-6 monthly intervals when allowed full activity. A standard annual report on each patient and any new developments are referred to the Committee. In addition, every patient has

been referred to the Health Centre at least once for discussion and a physical check by the medical health officer. Provision is also made for patients to be seen by the committee as a group but this has not yet been done as almost every patient has been seen by at least one member of the committee (in addition to the medical health officer) at some time or other.

Provision is also being made for laboratory tests as required (e.g. anti-streptolysin titres) and most of the attending physicians do such tests as sedimentation rates and electrocardiograms on all patients at regular intervals. Throat swabs are done whenever the penicillin issue is renewed and whenever a sore throat is mentioned or found in the patient or a member of his family.

The penicillin used is Penicillin G. Ammonium (as supplied by British Drug Houses) in bottles of one hundred 0.25 gm. (440,000 international units) scored tablets. The minimal dosage which follows that initially recommended by the Rheumatic Fever Committee of the American Heart Association is one tablet daily in two divided doses (i.e. a single supply lasts one patient just over 3 months which allows a safety margin when roads may be blocked by snow or mud). The pills are stable (unless exposed to damp) and it is advised that they be taken at least half an hour before meals. Greey et al. (20) have advised against taking oral penicillin (P.G.A.) after meals and even at the dosage we are using penicillin blood levels under 0.005 units of penicillin per 1 cc. of blood serum have been found an hour later when penicillin is taken after breakfast as well as when blood levels are taken before the morning pill.

At this dosage, the cost of the penicillin per patient year to the Provincial Government has been \$35.59, and there have been no other costs as laboratory services and the services of individual members of the committee have been made available free of charge. No additional staff (laboratory or nursing) were employed to cover the project.

TABLE I
ALLOCATION OF POSSIBLE RHEUMATIC FEVER CASES INVESTIGATED
(as at September 1, 1955)

Total no. patient records investigated	132
Placed on penicillin and still taking it	60
Approved for penicillin but inaccessible	2
Approved for penicillin but discontinued	2
Considered clinical cases but not needing penicillin	14
Considered possible cases—for follow-up by physician	18
Considered definitely not to be rheumatic fever	3
Where evidence was too old and inadequate for consideration	30
Cases still being investigated	3

It is still too early for an accurate evaluation, but a preliminary survey of our results is interesting. (See Tables I, II, III and IV). Of 132 possible diagnoses of rheumatic fever considered by the committee, 64 were approved for prophylactic penicillin and of these, 60 are at present on penicillin. This last group range is age from 4 to 43 with 83% between 6 and 20 years of age. The median age when the first attack of rheumatic fever occurred was 11 years with 38 patients (63%) giving a history of only one attack, 19 patients (32%) of two or more and 3 patients (5%) having no typical history of an acute attack. During the acute phase; of the so-called major manifestations, arthritis

TABLE II
DATA ON PATIENTS CURRENTLY UNDER PENICILLIN PROPHYLAXIS
(as at September 1, 1955)

Number involved	60			
Sex distribution	Males	25	Females	35
Age distribution	0-5	2	16-20	18
	6-10	13	21-35	5
	11-15	19	Over 35	3
	Median age: 14.5 years.		Range: 4 to 43 years.	
Number hospitalized	57			
Number of acute episodes prior to instituting prophylaxis	One	38	Three or more	7
	Two	12	None	3
Age at time of first attack	0-5	11	16-20	7
	6-10	13	Over 20	4
	11-15	21	No clear record	4
	Median age: 11 years.		Range: 4 to 41 years.	
Time between last attack and institution of penicillin prophylaxis				
Less than 3 months	23	2-3 years	8	
4-12 months	12	4 years and over	2	
One year	11	No clear record	4	
Median period: 6 months.				

TABLE III
PAST CLINICAL STATUS* OF PATIENTS CURRENTLY UNDER
PENICILLIN PROPHYLAXIS

Symptom or finding	Present	Absent	Inadequate record or test not done
Arthralgia	50	9	1
Carditis (excluding tachycardia per se)	45	13	2
Subcutaneous nodules	3	45	12
Chorea	8	39	13
Family history	11	36	13
History of previous respiratory infection	37	10	13
Epitaxis	12	32	16
Haematuria	9	46	5
Pulmonary changes	2	50	8
Raised sedimentation rate	48	4	8
Leucocytosis (over 10,000)	20	28	12
Anaemia (70% or less)	21	30	9
Positive throat swab for beta-haemolytic streptococci	13	7	40
Raised anti-streptolysin "O" titre (over 200 units)	12	4	44

*While in hospital or during acute phase.

was present in 85% (the percentages are of those patients where a definite note was made as to presence or absence of this feature), carditis (excluding tachycardia per se) was present in 78%, chorea in 17% and subcutaneous nodules in 6%. A history of a previous respiratory infection, a raised sedimentation rate, a positive throat swab for beta-haemolytic streptococci, and an antistreptolysin "O" titre of over 200 Todd units were obtained in more than 65% of the patients where reliable information was available.

TABLE IV
FOLLOW-UP RECORD OF PATIENTS CURRENTLY UNDER
PENICILLIN PROPHYLAXIS

<i>Time patients have been on prophylactic penicillin</i>			
1-3 months	6	10-12 months	4
4-6 months	11	13-15 months	21
7-9 months	3	16-17 months	15
Median period on penicillin: 13 months. Range: 1 to 17 months.			
Total treated patient-years (at Sept. 1, 1955): 55 years, 11 months.			
<i>Recurrences on treatment</i>			
	None		59
	Doubtful		1
	Definite		0
<i>Reactions demanding withdrawal</i>			
	None		58
	Temporary (doubtful)		2
	Serious		0
Patients refusing to start prophylaxis			0
Patients taking prophylaxis regularly			58
Patients showing some irregularity in taking penicillin			2
Patients discontinued for failure to maintain therapy			1
<i>Home conditions of patients</i>			
	Good		29
	Moderate		26
	Poor		5
<i>Note: 7 (out of 11) of those with a family history of rheumatic fever came from homes classified as "moderate" or "poor".</i>			
<i>Present physical status of patients</i>			
	No physical signs or incapacity		32
	Physical signs or incapacity		17
	Physical signs and incapacity		5
	Status still indefinite		6
<i>Persistent cardiac signs still present: 20 (12 of these were in patients with a history of only one acute attack)</i>			
<i>Persistent kidney signs still present</i>		3	
<i>Evident psychological disturbances still manifest</i>		3	

The interval between the last recorded attack and the institution of prophylactic penicillin ranges between nil and 6 years with a median delay of 6 months.

The median period for which our patients have been on penicillin is 13 months and the total treated patient years is just under 56. There have been no recurrences of rheumatic fever save possibly for one minor three-day arthritic episode without any other clinical or laboratory findings, and which was considered by the committee not to be an established recurrence. There have only been two minor reactions of an urticarial nature, in both of which the patients were put back on penicillin within two weeks without any further difficulty. No selected patient has refused to start prophylaxis and only one case took his medication so irregularly that subsidised therapy has been discontinued. Two other patients showed repeated occasional irregularity but this has apparently been corrected.

About half of our patients live under good home conditions (approximately the same proportion as for the population at large) and except for a suggestively smaller number of family cases there have been no significant differences between this group and those living under moderate or poor home conditions.

There have been no illnesses related to the development of penicillin resistant bacteria, and most of our patients claim to have been freer of minor illness than at any time in the last five years. While more than half show no present physical signs or incapacity, 20 still have persistent cardiac signs, 3 have persistent kidney signs, and 3 show some evidence of an apparent cardiac neurosis.

In view of the interest shown in the possible development of penicillin resistant bacteria, we have intensified our laboratory work these last three months (Table V). We matched our cases with controls of the same ages, sex, place of residence (city, village or farm) and mode of life. The laboratories did not know which were cases and which were controls. The number of positive throat swabs for different organisms shows no significant difference between the two groups except for the finding of more *B. haemolytic streptococci* and *E. coli*

TABLE V
LABORATORY FINDINGS ON THROAT SWABS FROM CONTROLS
AND PATIENTS UNDER PENICILLIN PROPHYLAXIS
(examined June to August, 1955)

	1	2	3	4
	CONTROLS (Lab. "A")	CASES (Lab. "A")	CASES (Lab. "B")	STAFF (Lab. "A")
No. of patients	51	50	29	2
No. of specimens	51	70	31	2
<i>B. haemolytic strep</i> (ungrouped)	2	14*(12)	1**	2***
<i>Strep. viridans</i>	43 (6)	30 (17)	—	—
<i>Staph. aureus</i>	12 (3)	13 (11)	7	—
<i>Staph. albus</i>	7 (1)	11 (2)	1	—
<i>M. tetragena</i>	—	2	—	—
<i>N. catarrhalis</i>	8 (1)	11 (6)	—	1
<i>E. coli</i>	7 (7)	24 (21)	1	—
<i>Pneumococci</i>	—	1 (1)	9	—
<i>B. subtilis</i>	—	2 (2)	—	—
<i>Diphtheroids</i>	1	1	—	—
Yeasts	1	1	—	—

*Of these 14 positives, 7 (6 heavy and 1 light) occurred in the first 10 swabs submitted (June 1st to 3rd, 1955). Swabs from these same patients sent to Lab. "B" (which uses blood media prepared from human blood with a possible inhibitory effect on certain Streptococcal groups other than Group "A") within two weeks showed no growth. The lab. technician and nurses collecting the specimens (see ***) were changed, and from the subsequent 60 swabs submitted, only seven further positives (all scanty growth) were obtained. The first six positives were all resistant to 1.5 units of penicillin, while of the last eight, six were sensitive to 1.5 units of penicillin (though resistant to 0.5 units) and two were sensitive to 0.5 units. These last eight cultures were grouped, and one was found to belong to Group "A", two to Groups M and N, and the remainder were merely identified as not being Group "A". The one Group "A" was sensitive to 0.5 units of penicillin. None of the patients showed any signs or symptoms of a possible streptococcal infection.

**This positive came from a patient whose house had burnt down one week previously and who was still taking the part charred pills she had recovered from the ashes.

***These streptococci were grouped into Groups M and N. Further swabs submitted one week later to Lab. "B" (using its blood media derived from human blood) showed no growth. There was no intervening medication given or evidence of illness.

Notes:

1. For the groups of controls and cases in columns 1, 2, and 4, Loeffler slopes and a semi-solid agar strep. transport medium were used for collection and transport; for cases in column 3, dry swabs were used.
2. Figures in brackets refer to number of swabs where insensitivity to 0.5 units of penicillin was reported. Sensitivity testing was done for controls and cases in columns 1, 2, and 4 but not for those in column 3.

from the treated group. The *B. haemolytic streptococci*, except for one transient infection which failed to show on retesting, were not from Group A and the majority were found at the very beginning of the testing program (7 out of the first 10 swabs submitted were positive for these streptococci) to largely disappear when my two senior nurses (who yielded the same organism from their throats) discontinued taking the swabs themselves. Interestingly enough, the second laboratory to which we were submitting swabs (dry swabs plated within 1-4 hours from when collected) failed to obtain positives for haemolytic streptococci from any of these patients (although they were obtaining plenty from our clinical cases of streptococcal pharyngitis), presumably because they were using blood agar made from human blood which discouraged growth of these particular groups of beta-haemolytic streptococci ("M and N"). The number of bacterial strains showing increased penicillin resistance was increased in the treated group and this was particularly noticeable with regard to *Strep. viridans* (17 out of 30 strains as compared with 6 out of 43) and *Staph. aureus* (11 out of 13 strains as compared with 3 out of 12). The incidence of the important penicillin resistant *Staph. aureus* was not high however compared with the total swabs taken (16%) and is less than is found amongst the nursing staff of most of our larger hospitals. The clearly discernible advantages of the prophylactic penicillin program appear to outweigh any potential disadvantages.

DISCUSSION

We are still considering whether to include in the treated group some additional older patients who were initially excluded largely because of their age. In 19 cases where the evidence of rheumatic fever was inconclusive and follow up by the family practitioner was recommended (one of these has since joined the treated group because of a definite recurrence) the median age was 15 years or the same as the treated group. Compared with these, another 14 patients with a median age of 36 years had fairly conclusive evidence of having had rheumatic fever but seemed to have recovered well and were not placed on penicillin largely because of their age.

It has also been considered whether older cases of established chronic rheumatic heart disease should be placed on prophylactic penicillin as recommended in the latest American Heart Association report. No accurate knowledge of the numbers involved is available but it is estimated from hospital statistics that this would at least treble the present patient load without a proportionate increased value to the community.

Provided the whole-hearted co-operation of the medical fraternity is obtained, and the program is controlled and subject to review as newer findings become established, rheumatic fever control is a worthwhile project.

SUMMARY

A rheumatic fever control project in the Moose Jaw Health Region is described which includes measures for the early and effective treatment of proven streptococcal infections and the prophylactic administration of oral penicillin to established cases of rheumatic fever. Cases are selected on clinical

grounds only by a committee of the local medical association with universal coverage and all costs borne by the Provincial Government.

Of 844 patients with streptococcal infections treated with penicillin by the Health Region on referral by their private practitioners only one developed rheumatic fever.

The case finding procedure for rheumatic fever is outlined. Of 132 possible cases considered by the committee, 60 are at present on 0.125 gm. of Penicillin G. Ammonium taken twice daily. These cases are subject to close supervision by nursing and medical personnel and to routine laboratory testing. The median period for which they have been on penicillin is 13 months. Only one patient has been excluded because of irregular medication and only two possible minor penicillin reactions (urticarias) occurred which did interrupt the prophylaxis. There have been no recurrences of rheumatic fever and no other illnesses associated with the development of penicillin resistant bacteria, though sensitivity tests have shown some increase in the number of penicillin-resistant bacterial strains from the throat flora of our patients as compared with a corresponding series of controls.

Rheumatic fever control appears to be a worth-while project.

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Letter from Great Britain

Social Surveys in Britain (Education)

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Manchester, England

THE Scottish Mental Survey (1947) by a committee under the chairmanship of Sir Godfrey Thomson, Emeritus Professor of Education, University of Edinburgh, and the study "Early Leaving" (1954) by the Central Advisory Council for Education (England) under the chairmanship of Sir Samuel Gurney-Dixon throw a good deal of light upon the inter-relationship of scholastic attainment, educational capability and home background. To those interested in Social Medicine these two reports are strongly recommended. They contain much more information than I propose to comment upon here. The point which I wish to bring out is the close relationship which exists between the home and the academic fulfilment of the bright child.

The Scottish survey studied the social background of a sample of children (by relating the results of an intelligence test). Nine socio-economic groups were used: (1) Professional and employers of ten or more workers (2) Self-employed, and employers of less than ten workers (3) Salaried employees (4) Non-manual workers paid weekly or more frequently (5) Skilled manual workers paid weekly or more frequently (6) Semi-skilled manual workers paid weekly or more frequently (7) Unskilled manual workers paid weekly or more frequently (8) Farmers (9) Agricultural workers. Children in these groups were presented in terms of (1) an intelligence test—using the mean test score (2) mean family size (3) mean age of mother (4) density of living—using mean percentage living in homes with fewer than 2 per room (5) migration (6) height (7) weight. The children from occupational classes 1 and 3 differ almost invariably from the other groups in having higher average intelligence test scores, in belonging to smaller families, in living in better housing conditions, in having greater mobility and better physique. The reverse holds for the children from certain other groups, particularly from class 7, the unskilled manual worker. The report goes on

"There is, at one end of the socio-economic scale, the pattern of small families, older parents, more favourable housing conditions, with children above average intelligence and physique, and at the other end of the scale, the large families, low housing standards, poor school attendance, and children below average in intelligence and in physical development." It

adds "On the effect these differences have on the future of the children, the survey data cannot enlighten us. The survey raises more questions than it answers. What will be the future of the intelligent children from the less favourable social environments, and what will happen to the dull children from the homes of higher socio-economic status?"

At least so far as concerns those children of high intelligence the study "Early Leaving" gives some of the answers. This related to a 10% stratified sample of all the English grammar schools, 8,644 children who entered in 1946, or who joined later by transfer from a secondary modern school. They were followed through school life up to Easter, 1953, and academic progress was estimated on the following six standards: A. Those who had obtained two passes at advanced level, or were still at school at Easter 1953 and were entered for two subjects at advanced level. B. All others who were still at school at Easter 1953. C. Those who had left after obtaining a School Certificate or five or more passes at Ordinary level. D. Those who had left after obtaining three or four passes at Ordinary level or one at Advanced level. E. Those who completed a five-year course without obtaining a School Certificate or as many as three passes at Ordinary level. F. Those who neither completed a five-year course nor obtained a School Certificate ("premature leavers" in the narrower sense of this expression). Academic achievement was correlated against father's occupation and the results arranged in five social classes as follows:

Professional and managerial, clerical, skilled, semi-skilled, unskilled. Children in the semi-skilled and unskilled classes did very badly. The report says:

"Of the 1621 children in our sample who entered the grammar school from these two classes, 917, or more than half, failed to get as many as three passes at Ordinary level, and of these 520 left before the end of their fifth year. 32%, and 37% respectively of the failures in these two ways, compared with 21% of the whole entry, were from these types of homes. Our sample tells us, therefore, that of approximately 16,000 children who in 1946 entered grammar schools throughout England from such homes, about 9,000 failed to get three passes at Ordinary level, and of these about 5,000 left before the end of their fifth year.

So many of the unskilled workers' children achieved little that it will be worth while considering them separately. The first point to observe is the low rate of entry from the unskilled workers' homes. The number of children from unskilled workers' families who might have been found in our grammar school sample if the proportion were the same as in the population as a whole is about 927; the actual number was 436. This suggests that some 5,000 children from unskilled workers' homes who might have been expected, if the yield from unskilled workers' homes were the same from other homes, to enter grammar schools in England in 1946 did not qualify for admission. The second important finding is the high rate of academic failure among those who did. Of the 436 children admitted, 248 or two-thirds, left without as many as three passes at Ordinary level. Thus, of about 4,360 children from unskilled workers' homes who entered grammar schools, only about

1,500 obtained the benefit that the grammar school is specifically designed to give. At a higher level the wastage was even more marked: on the same calculation only 230, or one in 20, obtained two advanced passes or entered for two Advanced subjects. These represent 1.4% of the 17,000 children who took advanced courses, about one-ninth of the proportion in which unskilled workers' children are found in the population as a whole."

The intelligent children of the unskilled and semi-skilled workers, in a system of free and compulsory secondary school education as in Britain, make a very poor showing. What are the reasons? I suppose even now we are little further forward. The report says:

"The reasons for this phenomenon must be very complex and we do not claim fully to understand them. The factors which we discuss below are the more obvious, but they are clearly incomplete. Throughout our consideration of this problem we felt ourselves, in spite of much public discussion, to be in territory that had so far been little explored; and it is probable that many economic, social and perhaps biological factors have escaped us. We are here in a field where many inhibitory influences are at work, often in an obscure manner. Educational sub-normality in parents may play a part. We do not consider that we could undertake any further study of the problem since this would call for machinery of research beyond our means. It is most important that further research into the problem of the effect of the home background, particularly that of the semi-skilled and unskilled worker, upon a child's education at a grammar school should be undertaken by somebody competent to enquire into social problems and able to give the necessary time for a prolonged and thorough investigation."

What is now needed is a survey by a university department in which the home is closely studied and the adverse factors examined in detail. For the immediate future it is suggested that the school health department should work more closely with head teachers of grammar schools, examining the background of boys and girls from the semi-skilled and unskilled workers' homes and seeking to remedy or alleviate adverse factors. Once again we see the phenomenon of public health expanding into socio-medical fields.

An Interim Report on Ocular Diseases due to APC Viruses in Ontario

H. L. ORMSBY, M.D., F.R.C.S.(C)¹

IN 1953 Rowe and co-workers (1) demonstrated the presence of latent viruses in tissue cultures of tonsil and adenoid tissues removed during routine operations. These viruses caused a cytopathogenic effect not only in tonsil and adenoid tissue but also in a variety of epithelial cells. The most sensitive of these tissues was the strain HeLa, originally derived from a carcinoma of the cervix.

This new group of agents, known as the adenoidal-pharyngeal-conjunctival (APC) viruses have been described by Bell and co-workers (2) as "viruses of the respiratory tract, non-pathogenic for laboratory animals, ether resistant, heat labile, filterable, and resistant to antibiotics". Complement fixation occurs and gives a group reaction which is non-type specific. Neutralization, however, is type specific, and there are at least eight immunologically distinct types. Five of these types (1, 2, 4, 5 and 6) have been cultured from adenoid and tonsil tissues; type 3 has been repeatedly cultured from patients with pharyngeal-conjunctival fever; and type 8 has been assigned to the Trimborn virus, recently isolated by Jawetz and co-workers (3) from a patient with epidemic keratoconjunctivitis.

Huebner and co-workers (4), in serological surveys, found that approximately 50% of infants from six months to one year of age had been infected by at least one type of APC virus; and at the age of 34, by at least four types. The complement fixation test is therefore of value only if it shows a rise in titre in convalescent sera following a sickness.

Type 3 APC virus has been isolated from throat swabs, eye washings, and stools of patients during epidemics of pharyngeal-conjunctival fever in Washington (2), San Francisco (5) and Toronto (6, 7). The type 3 virus is readily cultivated in tissue cultures of trypsinized monkey-kidney or HeLa cells.

Follicular conjunctivitis has been produced by the experimental inoculation of virus into the conjunctival sacs of human volunteers with types 2, 3, 4 and 5 (Ryan and co-workers) (8). Type 4 has been recovered from the eye washings of a laboratory worker who developed a conjunctivitis while working with the virus (8), and type 6 has been isolated from a patient in San Francisco with follicular conjunctivitis (Thygeson, personal communication). The type 8 APC virus has been isolated on only one occasion by Jawetz and co-workers (3).

PHARYNGEAL-CONJUNCTIVAL FEVER

In 1953 Cockburn (9) reported an epidemic which occurred in Greeley, Colorado, in 1951. The disease was characterized by "an unusual combination

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of features consisting of acute conjunctivitis, vesicular pharyngitis, muscle pains and pyrexia". The corneae in 13 of 54 of the patients examined with the slit-lamp three weeks after onset were found to have small, whitish plaques one mm. or less in size. The pre-auricular glands were not enlarged, but the glands of the neck were involved. Most patients had a temperature of 102 to 105 degrees F. which in some cases led to a diagnosis of poliomyelitis, but spinal puncture did not reveal any increase in the cells in the C.S.F. It was estimated that from 25 to 50% of children swimming in the pools developed the disease. In 1954, eight paired sera from patients who had had the disease in Greeley in 1951 were tested by Huebner, and the convalescent phase showed a rise in neutralizing antibody to the type 3 APC virus.

In 1954, Bell and co-workers (2) at the National Institutes of Health studied a widespread epidemic of illness in Washington, D.C., at a children's summer day camp, together with two additional outbreaks in surrounding areas, and some sporadic cases. This illness was similar to that described previously by Cockburn. It was spread primarily in swimming pools, but many cases also occurred in the homes of the affected children. The swimming pool at this camp was filled with water at the start of the season and was continually recirculated through slow sand filters. It was chlorinated by hand when the tests showed low residual chlorine. Tests were made by the camp caretaker three times a day and only on a few occasions was the residual chlorine less than 0.2 parts per million; usually it was 0.5 or greater. 70% of the camp children were attacked within a period of a few weeks, and the type 3 APC virus was readily isolated from patients during the first ten days after the onset of symptoms. Children in the youngest age groups who did not ordinarily use the swimming pool had the lowest attack rate, and were the last to become infected.

In Canada, pharyngeal-conjunctival fever has not been previously reported in the literature. In 1951, however, a number of adults with follicular conjunctivitis were referred to our laboratory with the typical symptoms of this disease. Attempts to isolate virus at that time using embryo mouse-brain in tissue cultures proved unsuccessful (10). No further cases of this type were seen until November 1954, but in the following six months, about 20 adults with this type of conjunctivitis were referred to us, and from seven of these, virus was isolated in tissue cultures of monkey-kidney epithelium or HeLa cells. Three of these strains were sent to the virus laboratories of the National Institutes of Health, and were reported to belong to the type 3 APC group of viruses (7). The clinical manifestations of the disease in adults consisted of a uni-lateral follicular conjunctivitis followed in most instances by involvement of the second eye in three to five days. The pre-auricular node was slightly enlarged and tender on the side of the affected eye. Pharyngitis occurred in two of this series of patients and catarrhal otitis media in one. None had any fever, malaise, or muscle pains. Corneal opacities were seen with the slit-lamp in about half of the patients and they were less opaque than those usually present in EKC. Most of the opacities disappeared within six weeks, and in only two instances have they persisted beyond six months. Vision was not seriously impaired in any case, but a slight blurriness occurred in the affected eye when the opacities involved the visual axis.

During the first week of August 1955, we commenced seeing children with pharyngeal-conjunctival fever. The clinical picture differed from that of adults, in that many had fever of 102 to 105 degrees F., pharyngitis was present in most, and catarrhal otitis media was a common complication. Corneal opacities were uncommon in children, and were only seen when looked for carefully with the slit-lamp within three weeks of the onset of the disease. This disease therefore resembled in every way that previously described by Cockburn in Colorado, and that in the 1954 Washington epidemic. Contagion appeared to be occurring in the swimming pools, and mothers voluntarily kept their children away from these centres, with the result that many pools were poorly patronized during the last two weeks of August.

In conjunction with the Department of Health of the City of Toronto, a survey of cases of pharyngeal-conjunctival fever within one half-mile of a North Toronto swimming pool was conducted (11). It was found that of 112 cases occurring in that area, 74 gave a history of swimming in the pool within six to ten days prior to the onset of the disease, six had not been in this pool but had been swimming elsewhere. Only one had not been in swimming and had no possible contact in the home. Thirty-one additional cases, eight of whom were parents, occurred in the homes of affected children.

TABLE I
(ORMSBY AND AITCHISON)

Cases of pharyngeal-conjunctival fever occurring within a half mile radius of a North Toronto indoor swimming pool (August 1955).	
Cases originating in pool (all children)	74
" " in pools elsewhere	6
" " from direct contact at home	31
No history of swimming or contact at home	1
Total cases	112

In Table II, one can see that the symptoms of the disease in the group of 104 children consisted of sore eyes in 68, fever and malaise in 75, sore throat in 63, and sore ears in 42.

TABLE II
(ORMSBY AND AITCHISON)
SYMPTOMS OF PHARYNGEAL-CONJUNCTIVAL FEVER IN 112 PATIENTS (AUGUST 1955)

	Children (104)	Adults (8)
Sore eyes	68	7
Fever, malaise and muscle pains	75	2
Sore throat	63	1
Sore ears	42	

Many additional cases of pharyngeal-conjunctival fever were studied at the Banting Institute and in the clinics of the Hospital for Sick Children and the Toronto General Hospital. Eye washings and throat swabs, together with acute and convalescent sera were taken from over 40 patients with the disease, and the results of these laboratory studies will be reported at a later date in conjunction with Dr. A. J. Rhodes and Miss Frances Doane.

EPIDEMIC KERATOCONJUNCTIVITIS

Epidemic keratoconjunctivitis appeared on the North American continent in 1941 and was first referred to as "shipyard conjunctivitis" and "industrial pink-eye". Hogan and Crawford (12) reported 125 cases (1942) and gave the disease its present name. At the onset there is a foreign body sensation in the eye, a profuse watery discharge, and photophobia. The pre-auricular node becomes enlarged and tender. After an interval of five or six days the second eye may develop the disease but this is usually less severe in its course. Corneal opacities appear about the eighth day in one or both affected eyes, frequently occurring in the central area and resulting in blurring of the vision. These opacities have been called "major" opacities to distinguish them from those of the type 3 APC infection, and they may persist for a year or longer. Pseudo-membranes are commonly present on the conjunctiva.

There is little evidence in the literature that epidemic keratoconjunctivitis occurs in children, but the typical opacities have been seen in a child by Thygeson (personal communication). However, Mitsui (13) recently described experiments in which he transferred eye washings from adult patients with typical EKC to the eyes of infants. These children developed fever and membranous conjunctivitis without corneal opacities. Thus it is possible that EKC may manifest itself as a respiratory disease in children, and as keratoconjunctivitis in adults.

The only epidemic of EKC reported in Canada was that in the Ford Motor Plant in Windsor, Ontario, in 1951 (McGavin, Boley and Ormsby) (14). Of 549 patients who reported twice daily to the hospital dispensary for treatment during the course of their disease, only 89 developed corneal sub-epithelial opacities which could be seen by focal illumination with the binocular loupe. One year later, 29 of 63 of these opacity cases which could be contacted for study, still had residual corneal opacities and visual symptoms.

In the Toronto area, during the period of this study (1950-55) only four patients with typical EKC have been seen.

TABLE III
PATIENTS WITH TYPICAL EKC SEEN IN THE TORONTO AREA
(1950-55)

Patient	Residence	Year	Source of infection	Occupation
1	Maple, Ontario	1951	Unknown	Farmer
2	Brooklyn, "	1954	Unknown	Farmer's wife
3	Toronto, "	1954	Patient 2	Eye physician
4	Toronto, "	1955	Lab. infection from patient 2	Virus technician

It will be seen that the two sporadic cases of EKC originated in rural areas. Patient 1 was a farmer who had not been away from home for some weeks prior to the onset of the disease, and the only possible source of his infection was from his immediate family, none of whom had had an eye infection.

Patient 2 lived on a farm 50 miles from Toronto, and knew of no possible source of her infection, yet her eye physician (patient 3) developed EKC nine days after her visit to his office. Patient 4 developed the disease ten days after handling the tissue culture material from patient 2.

VIRUS STUDIES

Isolation of the virus of EKC has been claimed by Sanders and Alexander (1942) (15), Sezer (1953) (16) and by Jawetz and co-workers (1955) (3).

In the original isolation by Sanders and Alexander, infected eye washings were passed in tissue cultures of embryonic mouse-brain, with adaptation of the virus to adult mice. An experimental inoculation of the eye of a human volunteer with this virus produced conjunctivitis without opacities and a rise in antibody titre to the inoculated virus. Subsequently a number of strains of EKC virus were isolated by Braley and Alexander, working in the same institution. Only one of these strains survived storage during the war years and this was studied by Cheever (17) and Ruchmann (18), who showed independently that it was neutralized by St. Louis encephalitis hyperimmune serum. Cheever could not demonstrate neutralizing antibodies to the virus in sera from patients who had recovered from typical EKC. Similarly, Ormsby and Fowle (10) tested 61 sera from patients from the Windsor epidemic and found no neutralization in any of these sera to the Sanders-Braley virus. In our attempts to isolate virus from the Windsor patients, a number of strains were isolated, all of which were subsequently shown to be mouse-encephalomyelitis virus closely related to the Yale TO strain.

Sezer (16), in Turkey, adapted his strains of EKC virus to eggs by first grafting human cornea onto the egg membrane. Unfortunately his strains of EKC virus have not been available for study on this continent. Fowle and co-workers (6) were successful in adapting one strain of type 3 APC virus to eggs by similar techniques.

In view of the recent developments in the APC group of viruses, none of which have thus far been adapted to experimental animals, the original claims for the isolation of the EKC virus seems questionable, since they depended upon the adaptation of the virus to mice.

Recently Jawetz and co-workers (3) at the University of California isolated a strain of virus from a patient ("Trimborn") who had acquired typical EKC in the Orient, and from whom they obtained conjunctival washings during the acute phase of the disease. The "Trimborn" virus is a typical APC agent, which propagates best on HeLa cells. Sera from patients recovered from EKC in Canada and the United States have shown antibody to this virus, but up till the present time no human volunteer has been inoculated.

DISCUSSION

At this time, in Ontario, there are known to be two distinct clinical entities in which keratoconjunctivitis with corneal opacities occur. The type 3 APC syndrome would appear to be a disease with characteristics sufficiently clear cut to allow for the recognition of isolated cases. The isolation of the type 3 APC virus in eye washings, throat swabs and stools, offers an explanation for its transmission in swimming pools and in direct contacts. This disease may be expected to become more prevalent in the future, and may create a serious problem for Public Health departments since the virus is resistant to ether and the common antiseptics. Unless some anti-viral agent is found which

can be used in swimming pools, the only method of limiting transmission will be by the rapid changing of the water.

There appears to be sufficient evidence at this time to state that the type 8 APC virus ("Trimborn") is the cause of epidemic keratoconjunctivitis. However, further isolations and studies of virus from patients with EKC are necessary. It has not yet been proven that this virus causes the typical conjunctivitis with corneal opacities in human volunteers.

SUMMARY AND CONCLUSIONS

1. Epidemics of viral conjunctivitis with corneal opacities occurred in Ontario in 1951 and in 1955.

2. Sera from four patients with EKC in the Windsor epidemic of 1951 and from two patients with EKC in Toronto in November 1954 had neutralizing antibodies to the type 8 APC (Trimborn) virus of Jawetz.

3. From November 1954 until June 15, 1955, twenty adult patients with viral conjunctivitis were studied. Half of these patients developed minor corneal opacities, and from eye washings from seven, virus was isolated in tissue cultures of HeLa cells or monkey-kidney.

4. Three of these strains of virus were sent to the virus laboratories of the National Institutes of Health and were found to belong to the type 3 APC group of viruses.

5. A widespread epidemic of pharyngeal-conjunctival fever in children and adults occurred in Ontario in the summer of 1955. This was transmitted primarily in swimming pools, and secondarily by direct contact.

This investigation has been carried out under the National Health Grant 605-9-63.

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RHEUMATIC FEVER PREVENTION

IN this issue of the JOURNAL, Dr. Peter B. Peacock outlines a program for the prevention of recurrences of rheumatic fever in the Moose Jaw Health Region, of which he is the Medical Officer of Health. The program was introduced in January 1953 in an urban and semi-rural population of approximately 50,000 in Saskatchewan. Prevention of rheumatic fever is dependent on the protection of the individual against infection with Group A streptococci. Programs for the prevention of this disease have given major attention to the prevention of recurrent attacks, primarily through the administration of sulphonamides or penicillin. Prevention of the first attack has received less attention. However, Rammelkamp and Associates (1) showed that prompt and adequate treatment with penicillin resulted in the eradication of streptococci from throats and then the subsequent incidence of rheumatic fever was very small. In the Moose Jaw area attention was directed both to the effective treatment of streptococcal throat infections and the prevention of further attacks of rheumatic fever in children who had recovered from a previous attack.

The attention of Medical Officers of Health is being directed to the problems of chronic diseases including heart disease. The importance of rheumatic fever as a contributor to heart disease has long been recognized. It is responsible for much sickness, disability, economic loss and death. It can be prevented through the proper use of penicillin, which is an inexpensive drug, whereas the treatment of acute rheumatic fever is only partially successful. Prevention, however, is effective and practical. The plan followed in Moose Jaw stresses the importance of thorough treatment of streptococcal throat infections and the prevention of recurrent attacks. It was appreciated that control is a public health problem and in the planning, control was placed under the local Medical Association with the Medical Officer of Health operating the plan. Of special interest is the use of ammonia penicillin by the oral route, given in daily doses of 0.25 gram (440,000 units). The occurrence of reactions following oral administration in Moose Jaw and in extensive groups in the Armed Services of the United States was infrequent and not considered as significant or sufficient to limit its use. Persons known to be sensitive to penicillin were excluded from the groups receiving prophylactic penicillin.

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To the Editor

Your attention is directed to the article "Korean Malaria in Canada" by O'Rourke which appeared in the October 1955 edition of your Journal.

This article points out that U.S. servicemen returning from Korea are given 15 mgm primaquine for 14 days after leaving Korea and that this produces a radical cure in suppressed *vivax* infections. The author recommends this procedure for Canadian servicemen returning from Korea and thus suggests, by implication, that this practice has not been followed for Canadians.

The fact of the matter is that the use of

primaquine, in the dose and circumstances mentioned, has been a routine for Canadian servicemen since November 1952.

Since Dr. O'Rourke's article will be misleading to those doctors who are called upon to treat malaria in Korean veterans in this country it would be appreciated if you would take the necessary steps to correct the impression he has created.

K. A. HUNTER, Brigadier
Director General Medical Services
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Army
Ottawa, Ontario.

NEWS

THE MERITS OF using television in a health education program have long been acclaimed, yet few local departments have made use of it. The reasons generally given are—it costs too much, takes too much time, and we do not have anyone qualified to produce such a program. Wellington County Health Unit, Fergus, Ontario, recently proved that these protestations have little merit when broadcasting facilities are available.

Under the direction of their health educator, who had no previous experience in television production, Wellington County Health Unit recently produced a very effective, inexpensive program with a minimum of staff time spent on it. The half hour program was designed to interpret the services provided by the Unit to the people of Wellington County and also to those in the surrounding counties that lay within the station's reception area.

The broadcasting time and the filming of actual health unit activities in the field, to be used on the program, were donated by the station (Kitchener CKCO-TV) as a part of its community service. The total cost of the program to the unit was \$5.70 for stage props, plus the cost of transportation to the broadcasting station on several occasions.

Although there was no actual detailed time study on the program, Wellington County officials claim it would not exceed 50 hours, including the time spent preparing the script filming and rehearsing.

The program which was viewed by an estimated audience of 25,000-35,000 was planned and produced by Dr. B. T. Dale, Medical Officer of Health, Dr. M. E. Jarrett,

Dental Officer, Miss Helen Fasken, Director of Public Health Nursing and Mr. D. A. Geekie, Health Educator, none of whom had any previous television experience. The response from the public was as Dr. Dale explained—"much more than gratifying", and as a result future programs are being planned.

The scope of television as a means of health education is almost limitless, and as the number of local stations increase, more and more local health departments will have broadcasting facilities at their disposal. We in public health have long deplored that the people do not appreciate our services because we are not able to show them precisely what we do. Here is a medium by which we can actually display our services. The cost of such programs do not have to be excessive. The local stations in particular will require programs of a local nature and health agencies if they can provide programs of a high calibre, which they can, will receive a good share of the free community service time which the stations donate. It is of course a new method of mass education, a new phase of our work and will require considerable pioneering but the returns are tremendous and well worth the expenditure.

D. A. Geekie

EARL WARREN HALL, California's \$2,000,000 six-story School of Public Health was officially opened on September 17th. The building is named in honor of the Chief Justice of the United States Supreme Court, who was Governor of California when the School of Public Health was inaugurated at the university.

The building contains classroom and research facilities for the school's 120 graduate students, candidates for degrees of Master of Public Health and doctorates in special public health research. Undergraduate instruction is also given in biostatistics, public health administration, public health laboratory and sanitary science.

British Columbia

FOUR BRITISH COLUMBIA HOSPITALS, two of them in Vancouver, have been awarded more than half a million dollars in federal health grants for hospital construction. The largest single grant of \$432,000, goes towards construction at Port Coquitlam of a new three-storey mental hospital for the aged. The new addition to this institution, which is provincially owned and operated, would provide for admission of patients without prior admission to Essondale for investigation and active treatment. This will materially improve the care of the elderly mentally ill in British Columbia. Scheduled for completion in February, 1957, the reinforced concrete structure will feature, in addition to accommodation for 288 patients, day rooms, an auditorium, and physio-therapy, laboratory and dispensary facilities.

IN VANCOUVER a grant of \$72,166 has been awarded to St. Joseph's Hospital towards construction of a new addition with accommodation for 33 active treatment patients, 24 beds for the chronically ill, and nine beds for nurses. The new addition is scheduled for completion in March, 1956.

Vancouver General Hospital has been awarded a grant of \$12,590 to assist in expansion of current x-ray facilities. Construction is already underway on the new two-storey addition to the hospital's main x-ray department. On its completion next March, the existing areas will be renovated and continued in use for x-ray purposes.

At Mission City a grant of \$8,136 has been awarded to assist in construction of the new Rotary Health Centre. Upon completion the new community health centre will serve as branch office for the North Fraser health unit with accommodation for sanitary inspectors and other health unit staff and for prenatal and well-baby clinics. The new health centre is expected to serve some 25,000 persons in the surrounding areas. In addition to the federal and provincial grants, assistance toward the cost of construction is

being given by local municipalities, the Mission Rotary Club and several voluntary health organizations.

AN IMPROVED METHOD of evaluating preventive dental services on a province-wide basis has recently been completed by the Division of Preventive Dentistry and the Division of Vital Statistics of the Provincial Health Branch. Consultative advice and assistance was obtained from Dr. R. M. Grainger, dental statistician on loan from the Ontario Department of Health. The project was financed by a National Health Grant.

Manitoba

DR. ARTHUR SCHWARTZ has succeeded Dr. H. R. Stewart as Director of Dental Services for the province. Dr. Stewart, who retired August 31, has been on the provincial staff since 1950. A University of Toronto graduate in dentistry, Dr. Stewart spent 16 years in private practice in Transcona, leaving there in 1940 to join the Dental Services division of the RCAF. In 1945 he returned to private practice at Winnipeg and later at Whitby, Ontario, prior to accepting his government post. A native of Ashern, Manitoba, Dr. Schwartz obtained his degree in dentistry from the University of Toronto. Following three years service with the Canadian Army Dental Corps, Dr. Schwartz entered private practice in Kenora, where he was located for eight years prior to his present appointment.

DR. MAXWELL BOWMAN, provincial director of Preventive Medical Services, has been appointed a fellow of the American College of Preventive Medicine. The fellowship, first to be awarded a physician in Manitoba, was given in recognition of Dr. Bowman's work in preventive medicine and public health. During recent years Dr. Bowman has also been awarded a certificate from the American Board of Preventive Medicine and Public Health and a specialist's certificate from the Royal College of Physicians and Surgeons of Canada.

MR. RALPH E. WENDEBORN, Director of the Bureau of Health and Welfare Education, has been granted a one year leave of absence to take his master of public health degree in health education at the University of California at Berkeley.

The fourth annual Manitoba Hospital and Nursing conference was held from October 18 to 20 at the Royal Alexandra Hotel, Winnipeg. Sectional meetings included sessions of

the Manitoba Public Health Association, associated hospitals, registered nurses, dietitians, laboratory technologists, hospital pharmacists and medical record librarians.

DR. MAXWELL BOWMAN has announced that an estimated 109,000 Manitoba children will receive their first two doses of Salk vaccine this spring. Another 51,000 doses will be administered to children who received their preliminary shots earlier in 1955. Dr. Bowman said it was hoped that all children in grades one to eight would be vaccinated in 1956. If there is more vaccine than necessary for this purpose, it is planned that the age group will be expanded to include kindergarten pupils or children aged five and six not attending school. Every attempt will be made to reach all children in these age groups in areas of the province where medical service is available.

DR. M. R. ELLIOTT, Deputy Minister of Health, attended the 83rd annual meeting of the American Public Health Association, held November 14 to 18 at Kansas City, Mo.

THE SECOND CONFERENCE on Indians and Métis in Manitoba was held in the Manitoba Legislative Building on December 16 and 17. In keeping with recommendations made at the 1954 conference, a program for the rehabilitation of Indians and Métis in depressed areas in Manitoba was brought forth at the conference.

THE CITY OF BRANDON officially inaugurated its water fluoridation program on November 16 at a ceremony attended by the Hon. R. W. Bend, Minister of Health and Public Welfare. Brandon is the first Manitoba community to artificially fluoridate its water supply. Fluoridation equipment had, however, been operating in Brandon since March 9 of this year and tests have already been conducted on its effectiveness.

WINNIPEG'S CITY COUNCIL has pressed all municipalities receiving water from the city's water system to seek an early decision on their willingness to participate in a Greater Winnipeg fluoridation program.

Ontario

DR. C. E. CONNORS, Listowel, has been appointed Medical Officer of Health for Elma Township and Dr. J. S. Crispin, Red Lake, is the new Medical Officer of Health for Red Lake Improvement District.

DR. GORDON R. MANSFIELD and Dr. Douglas R. Hunter were appointed to the

medical staff of the Ontario Hospital Service on October 1. Dr. Mansfield to the Ontario Hospital at Hamilton and Dr. Hunter to the Ontario Hospital, New Toronto.

The following physicians of the Ontario Hospital Service were granted a Specialist Certificate in Psychiatry by the Royal College of Physicians and Surgeons of Canada, in this year's Certification examination. They have been appointed to the staff of the Ontario Hospital in the cities mentioned. Dr. Donald Bell-Smith, Brockville; Dr. Ralph M. Boyce, London; Dr. Henry A. Cardwell, London; Dr. Marion E. Chapman, London; Dr. Edgar Citry, Whitby; Dr. Hugh A. Kneale, Hamilton; Dr. Raymond H. Prince, London; Dr. David G. Sim, Hamilton; Dr. Frederick W. Snedden, Kingston; Dr. Peter G. Thomson, Toronto; Dr. John G. White, Hamilton.

Nova Scotia

MISS CHRISTINE MACINTOSH, who completed a summer semester at the University of Michigan, Ann Arbor, Michigan, has been appointed to our staff as a Supervisor of Nurses in the Lunenburg-Queens area. Miss MacIntosh formerly worked with us in the Lunenburg-Queens and the Atlantic Divisions.

MISS ELIZABETH YATES, who has been working in Port Hood, Cape Breton Island, has been transferred to Bedford, Halifax County. Miss Katherine Gillis, Public Health Nurse, Guysborough, was married in August and rejoined the staff in September as Mrs. Leland Williams.

FIFTEEN NURSES are taking the course in Public Health Nursing this year at Dalhousie University.

MISS PHYLLIS LYTTLE, President of the Atlantic Branch of the Canadian Public Health Association, attended the annual meeting in Edmonton on September 6, 7, and 8. This was made possible through the Department of Public Health and the Atlantic Branch of the Canadian Public Health Association.

DR. G. GRAHAM SIMMS, Assistant Deputy Minister of Health, spent a two-week period of observation and study with the Department of Health of the Province of Saskatchewan. Through the kindness and courtesy of Dr. F. B. Roth, Deputy Minister, and his staff, Dr. Simms was given an opportunity to look into all aspects of the Hospital Services and Medical Care programs in

Saskatchewan. The pioneer work and high state of development of these programs is outstanding on the continent.

THE HONORABLE GEOFFREY STEVENS, Minister of Public Health, has announced the appointment of Dr. Clyde Marshall as Inspector of Humane and Penal Institutions for the Province of Nova Scotia, to succeed Dr. J. J. MacRitchie who retired on August 31st. Dr. Marshall has been Chief of the Neuropsychiatric Division, Department of Public Health for the past eight years and in this capacity has been in charge of the mental health program of the Provincial Government. Dr. Marshall will continue in this post as well as taking on the new duties as Inspector.

RECENT APPOINTMENTS to the staff of the Neuropsychiatric Division are as follows: Miss Mary Laurence, Ph.D., has been appointed psychologist to the Victoria General Hospital. Dr. Laurence comes to us from the Department of Veterans Affairs in Toronto. Mr. Charles Preston, M.A., and Mr. Hugh Vincent, M.A., have been appointed psychologists to the Nova Scotia Hospital.

New Brunswick

DR. J. A. MELANSON, President, Canadian Public Health Association, attended the fifth annual meeting of the Atlantic Branch of the Canadian Public Health Association held in Kentville, Nova Scotia on November 9 and 10. Mr. A. J. Cameron, president of the New Brunswick - Prince Edward Island Branch of the Canadian Public Health Association was also present.

NEW APPOINTMENTS in the Mental Health Division include Dr. Conrad Drolet as Superintendent of the Provincial Hospital, Campbellton; Dr. Gordon H. Henley as Senior Psychologist in the Division; Mrs. Catherine Henley as Senior Psychiatric Social Service Worker.

NEW APPOINTMENTS in the Nutrition Services of the Maternal and Child Health Division; Miss Marilyn Trenholme as Dietary Consultant and Miss Monique Saint-Hilaire as junior nutritionist.

DR. R. A. H. MACKEN, Director of Provincial Laboratories disclosed that two of his personnel at the Saint John Laboratory have been awarded specialists certificates in Biochemistry. The two recipients are Miss Margaret McGinn and Miss Anna Cooke.

This is the first time specialist training of any kind has been completed in the New Brunswick Laboratories.

A MEETING on the co-ordination of Crippled Children Services called by the Minister of Health and Social Services, Honorable J. F. McNerney, M.D., was held in Fredericton on October 26. The meeting established itself as a permanent group with several objectives for the future directed to the well being of all crippled children in the Province.

THE FIRST MEETING of the Provincial Advisory Committee on the Rehabilitation of Disabled Persons was held in Saint John on November 4. Mr. Leonard Lockhart, who previously had been appointed by the Honorable J. F. McNerney as chairman of this Committee, conducted the meeting.

Prince Edward Island

DR. O. H. CURTIS was re-appointed Deputy Minister of Health and Chief Health Officer on November 15, 1955.

MISS DOROTHY COX, who has been with the Department of Health, Prince Edward Island for the past eleven years, has accepted an appointment with the World Health Organization. She has joined the staff of the J. J. Hospital, Bombay, India, where she will help integrate public health nursing into the basic curriculum.

ONLY TEN CASES of poliomyelitis were recorded on Prince Edward Island this year. All but two cases were in children under eleven years of age; four in the two year age group. There were no cases in vaccinated children.

ASSOCIATION NEWS

Fifth Annual Meeting of the Atlantic Branch

THE FIFTH ANNUAL MEETING of the Atlantic Branch of the Canadian Public Health Association was held in the Cornwallis Inn, Kentville, N.S., on November 9 and 10. An address of welcome was given to the members by Miss Phyllis J. Lyttle, President of the Atlantic Branch.

THE FIRST PAPER of the session was given by Miss Mildred I. Walker, who discussed the "Employer's Place in an Occupational Health Program". This was followed by Mr. H. S. Farquhar, Director of Old Age Assis-

tance and Disability Pensions, Halifax, who gave a paper on "The Present status of the Disabled Person's Allowance". The latter half of the morning was devoted to a Symposium: The Function of the Local Medical Officer of Health, with short papers by Dr. John C. Wickwire, Mrs. Mable Hamilton, Dr. Sam Marcus and Dr. J. J. Stanton.

THE AFTERNOON SESSION opened with Mr. Frank Wellard in the chair, and a paper on "Federal Health Grant Planning in Nova Scotia" by Miss E. A. Electa MacLennan. Dr. W. Gordon Dawson then gave a paper on "Dental Hygienists in Nova Scotia's Health Program". This was followed by sectional meetings in Sanitation, Nutrition, Mental Health and Occupational Health.

AT 7 P.M. there was a reception for all persons attending the annual meeting, followed by the annual banquet. Both these functions were tendered through the courtesy of the Department of Public Health of the Province. Dr. Leonard Miller, deputy minister of health for Newfoundland was guest speaker at the annual banquet. Four of Nova Scotia's most outstanding medical men were honored at this function with certificates of membership emeritus in the association. The presentations were made by the president, Miss Phyllis Lyttle, and the citations were given by the secretary, Dr. J. E. Hiltz, to Drs. Samuel W. Williamson, Yarmouth, Nova Scotia's oldest active medical practitioner; George H. Murphy, Halifax, Nova Scotia's first Minister of Health; Robert A. MacLellan, Rawdon Gold Mines, Hants County, a former member of the provincial legislature, and, in absentia, Arthur C. Jost, Guysborough, who first organized Christmas Seal sale for tuberculosis in the province.

ON THURSDAY MORNING the annual business session convened at 9 a.m. The Nomin-

ating Committee brought in the following slate of officers:

President, Miss Phyllis J. Lyttle, R.N., Halifax; 1st Vice-President, Dr. A. C. Guthro, Little Bras d'Or; 2nd Vice-President, Dr. C. E. A. DeWitt, Wolfville; Secretary-Treasurer, F. G. Wellard, Halifax; Executive, Dr. E. M. Fogo, Halifax; H. S. Farquhar, Halifax; Miss Electa MacLennan, Halifax; Miss Evelyn Armstrong, Sydney; Dr. Samuel Marcus, Bridgewater.

At the close of the business session a paper was presented "What has the Department of Welfare to Offer the Needy of our Province?" by Miss Beatrice Crosby. A Symposium followed on Child and Maternal Health with Dr. Henry B. Ross, Sister Peter Claver, Miss Maude MacLellan and Miss Hazel Roland as participants.

THE AFTERNOON SESSION opened with Dr. Robertson in the chair, and a paper by Dr. S. E. Bishop on "Restaurant Sanitation and the Local Medical Officer of Health." This was followed by a paper on "The Present Status of Vaccination against Poliomyelitis" by Dr. E. M. Fogo. The afternoon session closed with a paper by Dr. A. H. Barss and Dr. W. I. Bent "Erythema Nodosum and Tuberculosis in Children". This was discussed by Dr. R. C. Young, Nova Scotia Sanatorium, Kentville.

THE EVENING SESSION convened at 7.30 p.m. with Dr. G. M. Smith as Chairman. The first paper was presented by Dr. S. J. Shane on "Pleurisy with Effusion". This was followed by "The Future of Tuberculosis, Trends in Evidence" by Dr. C. J. W. Beckwith. Dr. W. A. Taylor presented a paper on "Coal Miners Lung Disease" and the session closed with a paper by Dr. C. B. Stewart, "The Common Cold: Its Potential, Its Prevention, Its Treatment".

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Public Health Nurses required by the City of Vancouver. Qualifications: Candidates must be eligible for registration in British Columbia and must possess either a University degree or Certificate in Public Health Nursing. Salary \$269 to \$321 per month, benefit plans in effect. Application forms must be obtained from and returned to the Personnel Director, City Hall, 453 West 12th Avenue, Vancouver 10, B.C.

Public Health Nurse wanted for health unit serving the area around Lethbridge, Alberta. Salary at the rate of \$2700 to \$3180, initial position on the scale depending on experience. Provision made for holidays, sick leave, and hospitalization. Car supplied for the use of the nurse. Application to the Medical Officer of Health, Barons-Eureka Health Unit, Coaldale, Alberta.

Supervisor of Public Health Nursing required. Generalized program in city of 43,000. Pension plan, Blue Cross and P.S.I. Workmen's Compensation, accumulative sick leave, transportation provided or allowance, five day week, month vacation with extra time at Christmas or Easter. For further information please write supplying details of training and experience to Dr. J. P. Wells, Medical Officer of Health, Peterborough, Ontario.

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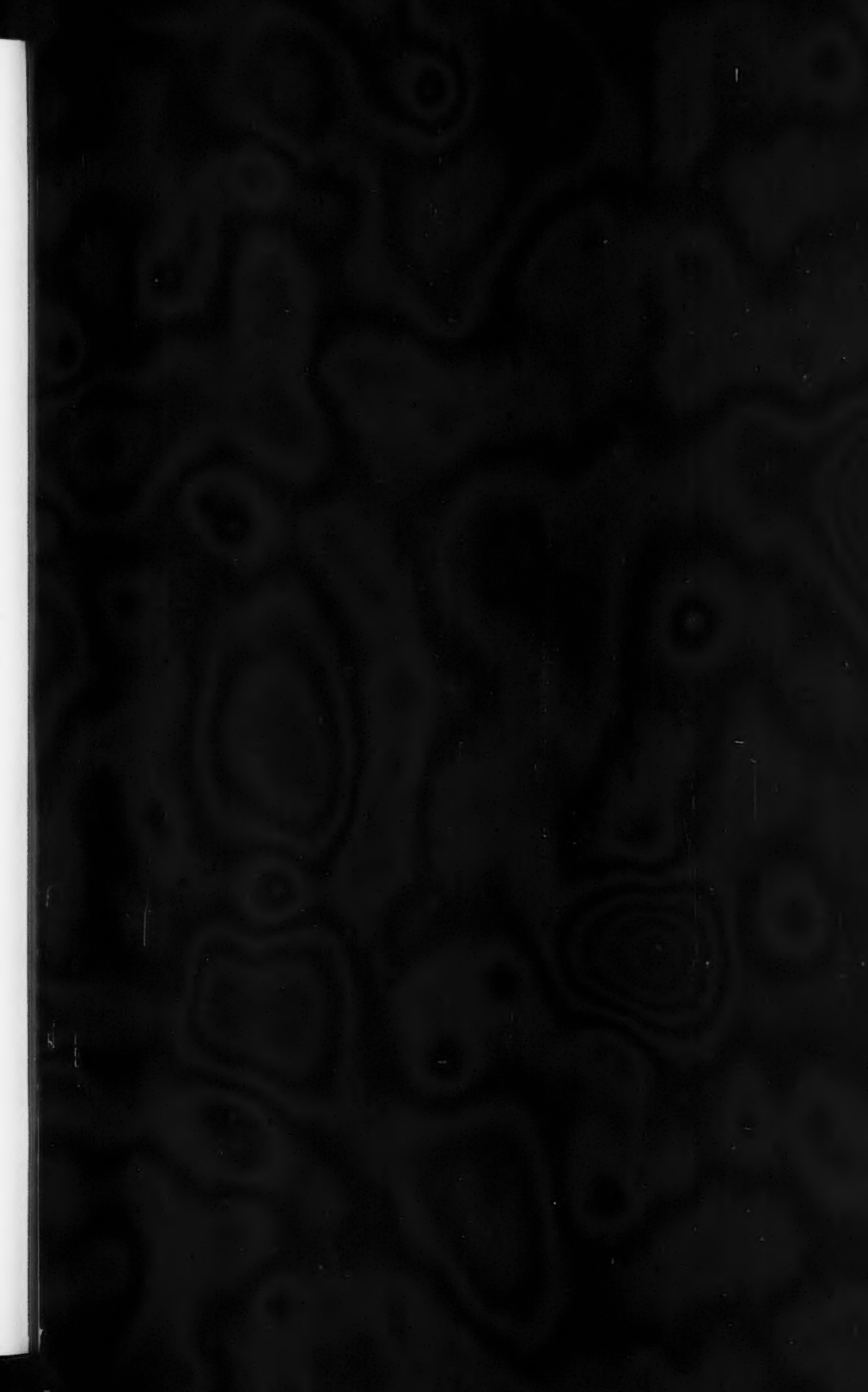
Salary Range: \$627-\$744 per month. Salary recognition is given to those possessing Certification as a Specialist in Public Health from the Royal College of Physicians and Surgeons (Canada).

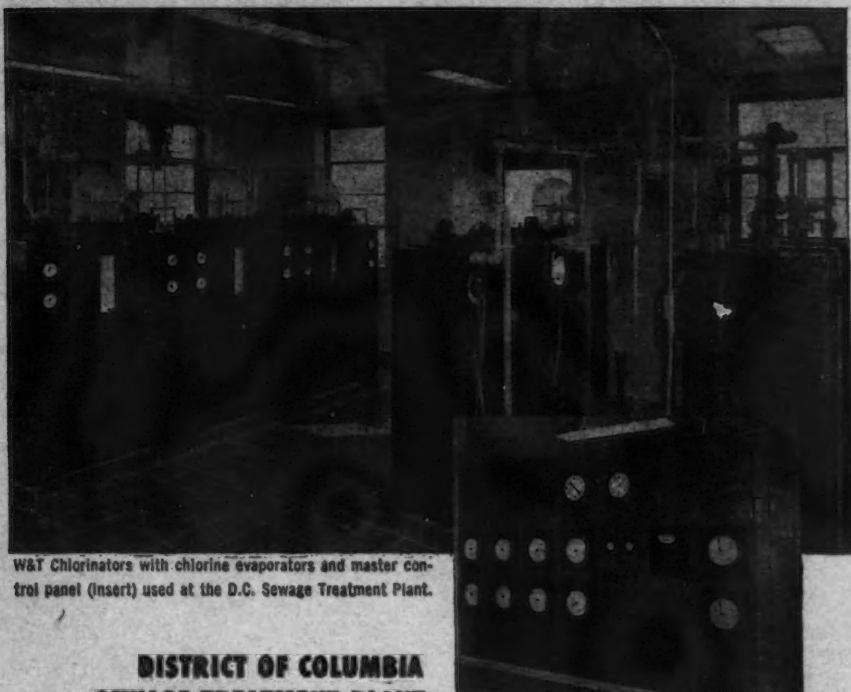
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Duties: This is a professional medical and administrative post in an area with a population of approximately 50,000. The holder will be required to develop regional preventive health services and a general public health programme.

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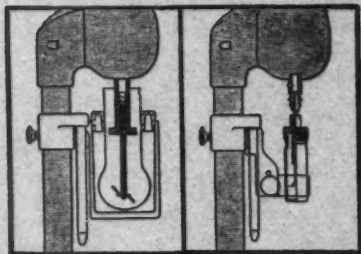
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